```
=> hepatitis (w) C
         46873 HEPATITIS
       3292012 C
L7       13260 HEPATITIS (W) C

=> fusion
        240574 FUSION
          9099 FUSIONS
L8      245460 FUSION
                 (FUSION OR FUSIONS)

=> L7 and l8
L9         642 L7 AND L8

=> NS3 and L9
          2033 NS3
L10        154 NS3 AND L9

=> NS4 and L10
           568 NS4
L11         39 NS4 AND L10

=> NS5 and L11
           828 NS5
L12         25 NS5 AND L11

=> core and L12
        279053 CORE
         60863 CORES
        309008 CORE
                 (CORE OR CORES)
L13         18 CORE AND L12

=> D L13 IBIB ABS 1-18
```

```
=> HCV (1) polypeptide
             0 HCV
             0 POLYPEPTIDE
L3           0 HCV (L) POLYPEPTIDE

=> HCV (1) polyprotein
             0 HCV
             0 POLYPROTEIN
L4           0 HCV (L) POLYPROTEIN

=> HCV
             0 HCV
L5           0 HCV

=> hepatitis (W) C
             0 HEPATITIS
            17 C
L6           0 HEPATITIS (W) C

=> file caplus
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
```

```
=> "recombinant antigen"
        169680 "RECOMBINANT"
          6589 "RECOMBINANTS"
        173271 "RECOMBINANT"
                 ("RECOMBINANT" OR "RECOMBINANTS")
        270142 "ANTIGEN"
        211726 "ANTIGENS"
        335098 "ANTIGEN"
                 ("ANTIGEN" OR "ANTIGENS")
L14       1261 "RECOMBINANT ANTIGEN"
                 ("RECOMBINANT"(W)"ANTIGEN")

=> HCV and L14
          9001 HCV
            17 HCVS
          9005 HCV
                 (HCV OR HCVS)
L15         49 HCV AND L14

=> core and L15
        279053 CORE
         60863 CORES
        309008 CORE
                 (CORE OR CORES)
L16         22 CORE AND L15

=> NS3 and L16
          2033 NS3
L17         11 NS3 AND L16

=> NS4 and L17
           568 NS4
L18          9 NS4 AND L17

=> NS5 and L18
           828 NS5
L19          8 NS5 AND L18

=> Fusion and L19
        240574 FUSION
          9099 FUSIONS
        245460 FUSION
                 (FUSION OR FUSIONS)
L20          4 FUSION AND L19

=> D IBIB ABS 1-4
```

```
=> "HCV fusion protein"
          9001 "HCV"
            17 "HCVS"
          9005 "HCV"
                 ("HCV" OR "HCVS")
        240574 "FUSION"
          9099 "FUSIONS"
        245460 "FUSION"
                 ("FUSION" OR "FUSIONS")
       1733213 "PROTEIN"
       1203369 "PROTEINS"
       2012676 "PROTEIN"
                 ("PROTEIN" OR "PROTEINS")
L1           7 "HCV FUSION PROTEIN"
                 ("HCV"(W)"FUSION"(W)"PROTEIN")

=> "HCV recombinant antigens"
          9001 "HCV"
            17 "HCVS"
          9005 "HCV"
                 ("HCV" OR "HCVS")
        169680 "RECOMBINANT"
          6589 "RECOMBINANTS"
        173271 "RECOMBINANT"
                 ("RECOMBINANT" OR "RECOMBINANTS")
        211726 "ANTIGENS"
L2           4 "HCV RECOMBINANT ANTIGENS"
                 ("HCV"(W)"RECOMBINANT"(W)"ANTIGENS")

=> D L1 IBIB ABS 1-7
```

L13 . ANSWER 15 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:101593 CAPLUS
DOCUMENT NUMBER: 126:103104
TITLE: Diagnosis of, and vaccination against, a positive stranded RNA virus using an isolated, unprocessed polypeptide
INVENTOR(S): Liao, Jaw-ching; Wang, Cheng-nan
PATENT ASSIGNEE(S): Bionova Corporation, USA; Liao, Jaw-Ching; Wang, Cheng-Nan
SOURCE: PCT Int. Appl., 89 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9638474	A2	19961205	WO 1996-US8112	19960531
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
US 6153378	A	20001128	US 1995-454928	19950531
AU 9659575	A1	19961218	AU 1996-59575	19960531
EP 828756	A2	19980318	EP 1996-916828	19960531
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 11506328	T2	19990608	JP 1996-536677	19960531
BR 9608676	A	19991207	BR 1996-8676	19960531

PRIORITY APPLN. INFO.:

US 1995-454928	A	19950531
US 1992-962989	B2	19921016
US 1992-963483	B3	19921016
US 1993-143579	A2	19931026
WO 1996-US8112	W	19960531

AB The unprocessed polyprotein initially translated from the genome of a pos.-stranded RNA virus contains epitopic configurations that are not retained in the processed proteins. The structural protein region, in particular, loses an epitopic configuration upon processing at the cleavage site between the genomic region encoding the **core** protein and the genomic region encoding the protein adjacent the **core** protein, such as the envelope protein in HCV. Disclosed are compns., methods and assays relating to the diagnosis and detection of the presence of the pos.-stranded RNA virus, or antibodies to the pos.-stranded RNA virus, in a sample; compns. and methods for the induction of immune responses in, and vaccination of, an animal; and combination of the unprocessed **core** region with a non-structural protein (such as an **NS5** or an unprocessed **NS3-NS4 fusion** from HCV). Mol. cloning of cDNAs encoding the **core**-like antigen-adjacent protein and the **NS5** nonstructural protein of **hepatitis C** virus was described. ELISA using these recombinant proteins for detecting **hepatitis C** virus was demonstrated.

L13 ANSWER 16 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:54036 CAPLUS
DOCUMENT NUMBER: 126:73782
TITLE: Unprocessed **core**-envelope **fusion** protein and nonstructural protein for the diagnosis of and vaccination against **hepatitis C** virus
INVENTOR(S): Liao, Jaw-Ching; Wang, Cheng-Nan
PATENT ASSIGNEE(S): Bionova Corporation, USA; Liao, Jaw-Ching; Wang, Cheng-Nan
SOURCE: PCT Int. Appl., 73 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
WO 9637606	A1	19961128	WO 1996-US7378		19960522
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI					
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN					
ZA 9604094	A	19961203	ZA 1996-4094		19960522
AU 9659243	A1	19961211	AU 1996-59243		19960522
PRIORITY APPLN. INFO.:			US 1995-447276	A	19950522
			WO 1996-US7378	W	19960522

AB The unprocessed **core** protein region initially translated from the genome of **hepatitis C** virus (HCV) contains epitopic configurations that are not retained in the processed proteins. In particular, the **core** protein loses an epitopic configuration upon processing at the cleavage site between the genomic region (e.g., gene) encoding the **core** protein and the genomic region encoding the adjacent envelope region. The unprocessed epitopic configuration of the **core** region provides an improved ability to detect the presence of HCV, or antibodies to HCV, in a sample, including an unpurified sample or a sample of very small volume (which can be particularly helpful when testing a sample from an infant or other person having very little blood (or other suitable material) available for testing). Combining the unprocessed **core** region with a nonstructural protein (such as an **NS5** or an **NS3-NS4 fusion**) results in a synergistic effect that greatly enhances the already improved sensitivity and specificity provided by the unprocessed **core** region. The unprocessed epitopic configuration of the **core** region also provides an improved ability to induce an immune response upon administration of the **core** region into an animal. Recombinant methods are described for the preparation of a cloned DNA mol. (EN-80-2) derived from the HCV **core** and envelope regions and for a clone (EN-80-1) encoding the **NS5** nonstructural protein.

L13 ANSWER 13 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:776272 CAPLUS
DOCUMENT NUMBER: 128:45099
TITLE: Multiple epitope **fusion** protein and epitopes of **hepatitis C** virus and assay for antibodies
INVENTOR(S): Valenzuela, Pablo D. T.; Chien, David Ying
PATENT ASSIGNEE(S): Chiron Corporation, USA
SOURCE: PCT Int. Appl., 55 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9744469	A2	19971127	WO 1997-US8950	19970523
WO 9744469	A3	19971231		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6514731	B1	20030204	US 1996-653226	19960524
US 6428792	B1	20020806	US 1997-859524	19970520
AU 9732143	A1	19971209	AU 1997-32143	19970523
AU 719929	B2	20000518		
EP 935662	A2	19990818	EP 1997-927767	19970523
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
NZ 333431	A	20000526	NZ 1997-333431	19970523
JP 2001500723	T2	20010123	JP 1997-542848	19970523

PRIORITY APPLN. INFO.:

US 1996-653226	A	19960524
US 1997-859524	A	19970520
WO 1997-US8950	W	19970523

AB Multiple copy epitope immunoassays are produced by: (1) identifying nucleotide sequences that encode a plurality of different epitopes; (2) placing the nucleotide sequences into an expression cassette wherein at least two copies of a sequence coding for the same epitope, preferably from different strains of a pathogen, are placed in the cassette; (3) transforming a suitable host with the cassette in order to express the sequences encoding the epitopes; (4) purifying the expressed epitopes; and (5) coating the epitopes on a surface of a substrate. The purified epitopes are encompassed by the general structural formula (A)x-(B)y-(C)z which represents a linear amino acid sequence, B is an amino acid sequence of an epitope or cluster of epitopes and each B contains at least five and not more than 1,000 amino acids, y is an integer of 2 or more, A and C are each independently an amino acid sequence of an epitope or cluster of epitopes not adjacent to B in nature and x and z are each independently an integer of 0 or more wherein at least one of x and z is 1 or more. The epitopes of the invention are more soluble than and are therefore more easily purified than conventional epitopes. Further, the presence of repeating epitope sequences (repeating at least B in the same linear amino acid sequence from different strains of a pathogen) increases the sensitivity and specificity of the assay. Repeated epitope sequences in a single linear antigen also decreases masking problems and makes it possible to include a greater number of epitopes on a unit area of substrate thereby improving sensitivity in the detection of antibodies. Claimed are epitopes of proteins of **hepatitis C** virus and human immunodeficiency virus.

L13 ANSWER 14 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN

L13 ANSWER 12 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:298250 CAPLUS
DOCUMENT NUMBER: 131:127333
TITLE: Use of a novel **hepatitis C** virus (HCV) major-epitope chimeric polypeptide for diagnosis of HCV infection
AUTHOR(S): Chien, David Y.; Arcangel, Phillip; Medina-Selby, Angelica; Coit, Doris; Baumeister, Mark; Nguyen, Steve; George-Nascimento, Carlos; Gyenes, Alexander; Kuo, George; Valenzuela, Pablo
CORPORATE SOURCE: Chiron Corporation, Emeryville, CA, 94507, USA
SOURCE: Journal of Clinical Microbiology (1999), 37(5), 1393-1397
CODEN: JCMIDW; ISSN: 0095-1137
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The genome of **hepatitis C** virus (HCV) consists of seven functional regions: the **core**, E1, E2/NS1, NS2, **NS3**, **NS4**, and **NS5** regions. The U.S. Food and Drug Administration-licensed 2.0G immunoassay for the detection of anti-HCV uses proteins from the **core**, **NS3**, and **NS4** regions. The 3.0G ELISA includes the protein from the **NS5** region. The necessity of detecting antibodies to viral envelope proteins (E1 and E2) and to different genotype samples has been demonstrated previously. In this study we have attempted to improve the sensitivity of the anti-HCV assay by developing a single multiple-epitope **fusion** antigen (MEFA; MEFA-6) which incorporates all of the major immunodominant epitopes from the seven functional regions of the HCV genome. A nucleic acid sequence consisting of proteins from the viral **core**, E1, E2, **NS3**, **NS4**, and **NS5** regions and different subtype-specific regions of the **NS4** region was constructed, cloned, and expressed in yeast. The epitopes present on this antigen can be detected by epitope-specific monoclonal and polyclonal antibodies. In a competition assay, the MEFA-6 protein competed with 83 to 96% of genotype-specific antibodies from HCV genotype-specific peptides. This recombinant antigen was subsequently used to design an anti-HCV chemiluminescent immunoassay. We designed our assay using a monoclonal anti-human IgG antibody bound to the solid phase. Because MEFA-6 is fused with human superoxide dismutase (h-SOD), we used an anti-human superoxide dismutase, di-Me acridinium ester-labeled monoclonal antibody for detection. Our results indicate that MEFA-6 exposes all of the major immunogenic epitopes. Its excellent sensitivity and specificity for the detection of clin. seroconversion are demonstrated by this assay.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 10 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:835361 CAPLUS
DOCUMENT NUMBER: 134:16523
TITLE: Diagnosis of, and vaccination against, a positive stranded RNA virus using an isolated, unprocessed polypeptide encoded by a substantially complete genome of such virus
INVENTOR(S): Liao, Jaw-Ching; Wang, Cheng-Nan
PATENT ASSIGNEE(S): Bionova Corporation, USA
SOURCE: U.S., 35 pp., Cont.-in-part of U.S. Ser. No. 962,989, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6153378	A	20001128	US 1995-454928	19950531
US 5625034	A	19970429	US 1993-143579	19931026
CA 2222968	AA	19961205	CA 1996-2222968	19960531
WO 9638474	A2	19961205	WO 1996-US8112	19960531
W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN				
ZA 9604480	A	19961212	ZA 1996-4480	19960531
AU 9659575	A1	19961218	AU 1996-59575	19960531
EP 828756	A2	19980318	EP 1996-916828	19960531
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
CN 1189838	A	19980805	CN 1996-195184	19960531
JP 11506328	T2	19990608	JP 1996-536677	19960531
BR 9608676	A	19991207	BR 1996-8676	19960531

PRIORITY APPLN. INFO.:		
US 1992-962989	B2	19921016
US 1992-963483	B3	19921016
US 1993-143579	A2	19931026
US 1995-454928	A	19950531
WO 1996-US8112	W	19960531

AB The unprocessed polyprotein initially translated from the genome of a pos.-stranded RNA virus contains epitopic configurations that are not retained in the processed proteins. The structural protein region, in particular, loses an epitopic configuration upon processing at the cleavage site between the genomic region encoding the **core** protein and the genomic region encoding the protein adjacent the **core** protein, such as the envelope protein in HCV. Compns., methods and assays relating to the diagnosis and detection of the presence of the pos.-stranded RNA virus, or antibodies to the pos.-stranded RNA virus, in a sample. Compns. and methods for the induction of immune responses in, and vaccination of, an animal. Combination of the unprocessed **core** region with a non-structural protein (such as an **NS5** or an unprocessed **NS3-NS4**

L13 ANSWER 8 OF 18 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:587648 CAPLUS
DOCUMENT NUMBER: 137:139355
TITLE: **Hepatitis C** virus multiple copy epitope **fusion** antigens for diagnosis and treatment of HCV infection
INVENTOR(S): Valenzuela, Pablo D. T.; Chien, David Ying
PATENT ASSIGNEE(S): Chiron Corporation, USA
SOURCE: U.S., 24 pp., Cont.-in-part of U.S. Ser. No. 653,226.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6428792	B1	20020806	US 1997-859524	19970520
US 6514731	B1	20030204	US 1996-653226	19960524
CA 2250723	AA	19971127	CA 1997-2250723	19970523
WO 9744469	A2	19971127	WO 1997-US8950	19970523
WO 9744469	A3	19971231		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
EP 935662	A2	19990818	EP 1997-927767	19970523
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
NZ 333431	A	20000526	NZ 1997-333431	19970523
JP 2001500723	T2	20010123	JP 1997-542848	19970523
US 2003044774	A1	20030306	US 2002-174652	20020617

PRIORITY APPLN. INFO.:

US 1996-653226	A2	19960524
US 1997-859524	A	19970520
WO 1997-US8950	W	19970523

AB Human **hepatitis C** virus (HCV) has been identified as the etiol. agent of non-A, non-B hepatitis (NANBH). HCV viruses display considerable genotypic and phenotypic heterogeneity. Thus, there is considerable need in the art for more sensitive reagents that facilitate the detection of HCV variants. The genome of **hepatitis C** virus (HCV) consists of seven functional regions: the **core**, E1, E2/NS1, NS2, **NS3**, **NS4**, and **NS5** regions. An attempt was made to improve the sensitivity of anti-HCV assays by developing multiple copy epitope **fusion** antigens (MEFAs) which incorporate the major immunodominant epitopes from the functional regions of the HCV genome. These MEFAs are encompassed by the following generic structural formula: (A)x-(B)y-(C)z. This formula represents a linear amino acid sequence comprising multiple copies of one HCV epitope (A) linked to multiple copies of another HCV epitope (B) which in turn is linked to multiple copies of yet another HCV epitope (C). Expression vectors carrying nucleic acid sequences comprising MEFA antigens carrying multiple copies of epitopes derived from the viral **core**, E1, E2, **NS3**, **NS4**, and **NS5** regions were prepared The resultant MEFA antigens were expressed, purified, and employed in suitable immunoassays for the detection of HCV-specific antisera. These antigens provide excellent sensitivity and specificity for the detection of HCV.

REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:298250 CAPLUS
DOCUMENT NUMBER: 131:127333
TITLE: Use of a novel hepatitis C virus (**HCV**) major-epitope chimeric polypeptide for diagnosis of **HCV** infection
AUTHOR(S): Chien, David Y.; Arcangel, Phillip; Medina-Selby, Angelica; Coit, Doris; Baumeister, Mark; Nguyen, Steve; George-Nascimento, Carlos; Gyenes, Alexander; Kuo, George; Valenzuela, Pablo
CORPORATE SOURCE: Chiron Corporation, Emeryville, CA, 94507, USA
SOURCE: Journal of Clinical Microbiology (1999), 37(5), 1393-1397
CODEN: JCMIDW; ISSN: 0095-1137
PUBLISHER: American Society for Microbiology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The genome of hepatitis C virus (**HCV**) consists of seven functional regions: the **core**, E1, E2/NS1, NS2, **NS3**, **NS4**, and **NS5** regions. The U.S. Food and Drug Administration-licensed 2.0G immunoassay for the detection of anti-**HCV** uses proteins from the **core**, **NS3**, and **NS4** regions. The 3.0G ELISA includes the protein from the **NS5** region. The necessity of detecting antibodies to viral envelope proteins (E1 and E2) and to different genotype samples has been demonstrated previously. In this study we have attempted to improve the sensitivity of the anti-**HCV** assay by developing a single multiple-epitope **fusion** antigen (MEFA; MEFA-6) which incorporates all of the major immunodominant epitopes from the seven functional regions of the **HCV** genome. A nucleic acid sequence consisting of proteins from the viral **core**, E1, E2, **NS3**, **NS4**, and **NS5** regions and different subtype-specific regions of the **NS4** region was constructed, cloned, and expressed in yeast. The epitopes present on this antigen can be detected by epitope-specific monoclonal and polyclonal antibodies. In a competition assay, the MEFA-6 protein competed with 83 to 96% of genotype-specific antibodies from **HCV** genotype-specific peptides. This **recombinant antigen** was subsequently used to design an anti-**HCV** chemiluminescent immunoassay. We designed our assay using a monoclonal anti-human IgG antibody bound to the solid phase. Because MEFA-6 is fused with human superoxide dismutase (h-SOD), we used an anti-human superoxide dismutase, di-Me acridinium ester-labeled monoclonal antibody for detection. Our results indicate that MEFA-6 exposes all of the major immunogenic epitopes. Its excellent sensitivity and specificity for the detection of clin. seroconversion are demonstrated by this assay.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L20 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1992:529836 CAPLUS
DOCUMENT NUMBER: 117:129836
TITLE: Hepatitis C antibody assay utilizing **recombinant antigens**
INVENTOR(S): Devare, Sushil G.; Desai, Suresh M.; Casey, James M.; Dawson, George J.; Lesniewski, Richard R.; Dailey, Stephen H.; Gutierrez, Robin A.; Stewart, James Lawrence
PATENT ASSIGNEE(S): Abbott Laboratories, USA
SOURCE: Eur. Pat. Appl., 115 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 472207	A2	19920226	EP 1991-114161	19910823
EP 472207	A3	19920826		
EP 472207	B1	19991013		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE				
CA 2049679	AA	19920225	CA 1991-2049679	19910822
AU 9182774	A1	19920507	AU 1991-82774	19910823
AU 655592	B2	19950105		
AT 185605	E	19991015	AT 1991-114161	19910823
ES 2139571	T3	20000216	ES 1991-114161	19910823
JP 04281792	A2	19921007	JP 1991-240587	19910826
JP 3354579	B2	20021209		
US 6172189	B1	20010109	US 1997-867611	19970602
US 6593083	B1	20030715	US 2000-690359	20001017

PRIORITY APPLN. INFO.:

US 1990-572822	A	19900824
US 1990-614069	A	19901107
US 1991-748561	B2	19910821
US 1991-748565	A2	19910821
US 1991-748566	B2	19910821
US 1992-989843	B1	19921119
US 1994-179896	B1	19940110
US 1996-646757	B1	19960501
US 1997-867611	A3	19970602

AB Immunoassays for detecting antibodies to antigens of hepatitis C virus (**HCV**) in a fluid sample are disclosed which use **recombinant antigens**. The antigens are **fusion** products with CMP-KDO synthetase (CKS) and are produced in Escherichia coli. The cloning vector pJO200 was used to fuse DNA encoding the recombinant proteins to DNA for CKS. Plasmid pHCV-34, encoding CKS-**HCV core** antigen (amino acids 1-150) **fusion** product, was prepared and expressed in E. coli. A screening immunoassay using this recombinant CKS-**core fusion** product and **fusion** protein CKS-33-BCD (prepared from plasmid pHCV-31; containing amino acid sequences from **HCV NS3** and **NS4** proteins) was sufficiently sensitive to detect seroconversion during the acute phase of **HCV** infection in chimpanzees. No preinoculation specimens were reactive.

L19 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:483107 CAPLUS
TITLE: Different clinical behaviors of acute hepatitis C virus infection are associated with different vigor of the anti-viral cell-mediated immune response
AUTHOR(S): Missale, Gabriele; Bertoni, Roberto; Lamonaca, Vincenzo; Valli, Antonietta; Massari, Marco; Mori, Cristina; Rumi, Maria Grazia; Houghton, Michael; Fiaccadori, Franco; Ferrari, Carlo
CORPORATE SOURCE: Cattedra Malattie Infettive, Univ. Parma, Parma, CA, 43100, USA
SOURCE: Journal of Clinical Investigation (1996), 98(3), 706-714
CODEN: JCINAO; ISSN: 0021-9738
PUBLISHER: Rockefeller University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The anti-viral T cell response is believed to play a central role in the pathogenesis of hepatitis C virus infection. Since chronic evolution occurs in >50% of **HCV** infections, the sequential anal. of the T cell response from the early clin. stages of disease may contribute to define the features of the T cell response associated with recovery or chronic viral persistence. For this purpose, 21 subjects with acute hepatitis C virus infection were sequentially followed for an average time of 44 wk. Twelve patients normalized transaminase values that remained normal throughout the follow-up period; all but two cleared hepatitis C virus-RNA from serum. The remaining nine patients showed persistent viremia and elevated transaminases. Anal. of the peripheral blood T cell proliferative response to **core**, E1, E1, **NS3**, **NS4**, and **NS5 recombinant antigens** and synthetic peptides showed that responses to all hepatitis C virus antigens, except E1, were significantly more vigorous and more frequently detectable in patients who normalized transaminase levels than in those who did not. By sequential evaluation of the T cell response, a difference between the two groups of patients was already detectable at the very early stages of acute infection and then maintained throughout the followup period. The results suggest that the vigor of the T cell response during the early stages of infection may be a critical determinant of disease resolution and control of infection.

L19 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN

L19 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:803916 CAPLUS
DOCUMENT NUMBER: 128:60524
TITLE: Characterization of antibodies against **core**, **NS3**, **NS4**, **NS5** region of hepatitis C virus in patients with hepatitis C
AUTHOR(S): Ishii, Keiko; Ishibashi, Midori; Ohtake, Teruko; Kano, Shojiro; Saito, Hidetsugu; Watanabe, Kiyoaki
CORPORATE SOURCE: Sch. Med., Keio Univ., Tokyo, 160, Japan
SOURCE: Rinsho Byori (1997), 45(12), 1156-1162
CODEN: RBYOAI; ISSN: 0047-1860
PUBLISHER: Rinsho Byori Kankokai
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB Third-generation screening assays for **HCV** antibodies were recently developed, in which a mixture of **recombinant antigens** from 4 different regions of the viral protein (**core**, **NS3**, **NS4**, **NS5**) was used. We reported the anal. performance and clin. usefulness of a 3rd-generation counting immunoassay (RANREAM **HCV**) with PAMIA 30 (Toa Medical Electronics Inc., Kobe). In the present study, we investigated a modified assay of RANREAM **HCV** to detect region-specific antibody by using single antigen from 4 different regions, and studied response pattern of **HCV** antibodies and region-specific antibody in the patients with **HCV** infection. **HCV** antibodies of the seroconversion panel serum samples (Boston Biomedica, Inc., USA) measured by RANREAM **HCV** were greatly coincident with those obtained by Ortho RIBA 3.0. The region-specific assay of serial sera from the patient with acute hepatitis revealed that anti-**core** antibody was produced at the initial stage of infection. In 165 patients with chronic hepatitis, pattern of region-specific antibody was different from case to case, although anti-**NS3** and anti-**core** antibodies seemed to be predominant. The change of pattern was not observed for at least 1 yr. All 2 cases who achieved complete remission with interferon showed low serum titer of anti-**core** antibody, in contrast to partial or non remission patients in which the level of anti-**core** antibodies was low in 6 of 16 cases.

L19 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN